A.D. 1867, 30th NOVEMBER. N° 3406.

Telegraph Posts.

LETTERS PATENT to Samuel Sharrock, of Liverpool, in the County of Lancaster, Engineer, for the Invention of "IMPROVEMENTS IN THE POSTS OR UPRIGHTS FOR ELECTRIC TELEGRAPHS."

Sealed the 8th May 1868, and dated the 30th November 1867.

PROVISIONAL SPECIFICATION left by the said Samuel Sharrock at the Office of the Commissioners of Patents, with his Petition, on the 30th November 1867.

I, SAMUEL SHARROCK, of Liverpool, in the County of Lancaster, Engineer, do hereby declare the nature of the said Invention for "IMPROVEMENTS IN THE POSTS OR UPRIGHTS FOR ELECTRIC TELEGRAPHS," to be as follows:—

This Invention has for its object improvements in the posts or uprights for electric telegraphs.

These improvements relate, firstly, to hollow metal telegraph posts, and consist in strengthening and protecting such posts by using wrought iron or other metal aprons or shorter tubes, ordinarily three to four diameters in length, fitting tightly on the lower ends and joints of the above said metal posts outside so as to strengthen and protect such posts at these parts, their usual breaking points, thereby removing the breaking points of such posts further up the posts where they are proportionately stronger and better able to resist the

strain that there comes upon them; they also serve to protect the posts from oxidation considerably above the ground line.

Secondly, these improvements relate to posts or uprights for carrying electric telegraphs over wide and large bodies of water, for which purpose I sink screw piles into the bed of the river, lake, or sea in a triangular, rectangular, or other form, spaced at distances apart, and upon these screw piles I erect a system of hollow or solid pillars securely fastened and thoroughly braced together, and so build upwards tapering to any desired height, and finally secure on the top an ordinary hollow metal telegraph post strengthened as above described. The above open or braced method I prefer, but a single hollow metal tube may similarly be sunk (with either a screw or a plain lower end) into the bed of the river, lake, or sea, and built upwards with hollow tubes of varying diameter to any desired height; the interior of all such tubes of metal can be filled with earth, stone, brickwork, or concrete, or left hollow.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Samuel Sharrock in the Great Seal Patent Office on the 29th May 1868.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, SAMUEL SHARROCK, of Liverpool, in the County of Lancaster, Engineer, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Thirtieth day of November, in the year of our Lord One thousand eight hundred and sixty-seven, in the thirty-first year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Samuel Sharrock, Her special licence that I, the said Samuel Sharrock, my executors, administrators, and assigns, or such others as I, the said Samuel Sharrock, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVEMENTS IN THE POSTS OR UPRIGHTS FOR ELECTRIC TELEGRAPHS," upon the condition (amongst others) that I, the said Samuel Sharrock, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and

ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Samuel Sharrock, do hereby declare the nature of the said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof, that is to say:—

This Invention has for its object improvements in the posts or uprights for electric telegraphs.

These improvements relate, firstly, to hollow metal telegraph posts, and consist in strengthening and protecting such posts by using wrought iron or other metal aprons or shorter tubes, ordinarily three to four diameters in length, fitting tightly on the lower ends and joints of the above said metal posts, outside by preference, so as to strengthen and protect such posts at these parts, their usual breaking points, thereby removing the breaking points of such posts further up the posts where they are proportionately stronger and better able to resist the strain that there comes upon them; they also serve to protect the posts from oxidation considerably above the ground line.

Figure 1 is an elevation of a hollow metal telegraph post thus strengthened and protected; Figure 2 is a plan in section of the same.

a, *a*, is the cast-iron foot or socket, with the cross pieces a^1, a^1, to give it a better hold of the ground; *b* is a length or piece of hollow wrought-iron taper tube fitted on to it; *c* is a second length or piece fixed at the top of the piece *b*; *d* is a cast-iron cap or plug closing the upper end of the piece *c*; *e* is a lightning conductor; *f* is the apron or short tube covering the joint between the foot or socket *a*, and the piece *b*, a vertical section through this apron and the parts which it surrounds is shown to a larger scale at Figure 3; *g* is the apron or short tube covering the joint between the lengths or pieces *b* and *c*, and Figure 4 is a vertical section to a larger scale of this covering tube *g* and the parts which it surrounds. The insulators are carried by arms secured to the upper part of the post in the usual way by metal brackets.

Secondly, these improvements relate to posts or uprights for carrying electric telegraphs over wide and large bodies of water, for which purpose I sink screw piles into the bed of the river, lake, or sea in a triangular, rectangular, or other form spaced at distances apart, and upon these screw piles I erect a system of hollow or solid pillars securely fastened and thoroughly braced together and so build upwards, tapering to any desired height, and

finally secure on the top an ordinary hollow metal telegraph post strengthened as above described.

Figure 5 is an elevation of a telegraph standard thus constructed. *a*, *a*, *a*, are three hollow metal piles screwed into the ground, they are connected together just above the ground surface by the bonding girder *b*, a horizontal section of the standard taken just above this girder is shown at Figure 6. The bonding girder *b* is also shewn on a larger scale and more in detail at Figure 7. *c*, *c*, are lengths of the columns or pillars placed one over the other until the surface of the water is reached; *d*, *d*, are horizontal struts, and *e*, *e*, are diagonal ties by which the structure is stiffened. The parts *c*, *d*, and *e* are seen on a larger scale and more in detail at Figure 8. Above the water level the columns or pillars receive a cap plate *f* with a central projection upon it, this cap plate is securely bolted to the top flanges of the columns or pillars, and the lower length of the upper hollow post, which may be such as that described in respect to Figure 1, is stepped over the projection upon it; *g*, *g*, are crosstrees fixed on the top of the cap plate *f*, and *h*, *h*, are stays passing over them and the upper part of the post to secure it more completely to the pillars *c*, *c*. The braced standards may be arranged with the columns or pillars in a triangular, quadrangular, or other form on plan, and the pillars may be spaced at any required distance apart, but I prefer the base at the ground line to be from one-tenth to one-sixteenth of the height of the standard from the ground line to the top of the post. The pillars above the ground should all be of uniform length with faced flanges at each end, the length being regulated by the facilities of transport to the place of erection. The bracing to brace these pillars is of wrought iron or steel, and the arrangement of this bracing which I prefer is shewn in detail by Figure 8, which is the side view or elevation of one bay or length, the other bays being similar but gradually narrowing to the top of the post. The shorter lengths of the diagonal or tension rods should be of one size throughout and fit anywhere so that the standards having been fitted together at the place of manufacture may be put together at the place of erection by unskilled labor. The connection of the single wrought-iron or steel pole at the top with the system of braced work is shown in detail at Figure 9.

The method of erecting the structure is as follows:—Under each column or pillar at the proper distance apart is first placed a metal pile *a* having a screw blade at the lower end either solid or attached to the pillar; these are made in any desirable length, and with any desirable size of screw to suit the nature of the ground. These being first placed in position from barges or rafts they are screwed down into the ground (vertically for simplicity, but it may be angularly

where skilled labor can be employed) by means of a capstan and winches, or by long arms projecting out of the capstan and walked round by men. In case of great depth of water at the place and time of erection several lengths of the pillars are to be bolted together to bring the pillars up to the desired height above the water, when having screwed down to a sufficient depth for stability (which will vary with the nature of the ground) the bonding girder, Figure 7, and all braces and connections under water can be fixed and secured by divers; all like parts being similar the whole can then be erected almost as fast as it can be hoisted up, and the standard will form its own stage all the way up.

The above open or braced method I prefer, but a single hollow metal tube may similarly be sunk (with either a screw or a plain lower end) into the bed of the river, lake, or sea, and built upwards with hollow tubes of varying diameter to any desired height. The interior of all such tubes of metal can be filled with earth, stone, brickwork, or concrete or left hollow.

Figure 10 is a side view of a telegraph support intended to be erected by excavation from the interior; it is constructed of a number of cylinders bolted together with internal flanges. A number of lengths of the cylinders are bolted together and lowered into their place from barges or fixed stages, and the interior earth excavated by means of divers or otherwise until sunk to the proper depth, after which the upper lengths are bolted together as before.

In witness whereof, I, the said Samuel Sharrock, have hereunto set my hand and seal, this Thirteenth day of May, in the year of our Lord One thousand eight hundred and sixty-eight.

SAMUEL SHARROCK. (L.S.)

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FIG. 1.

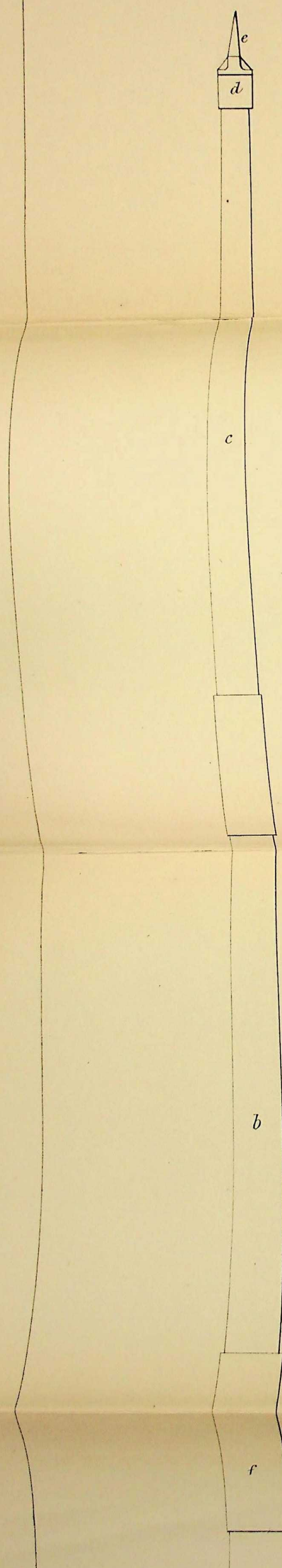


FIG. 4.

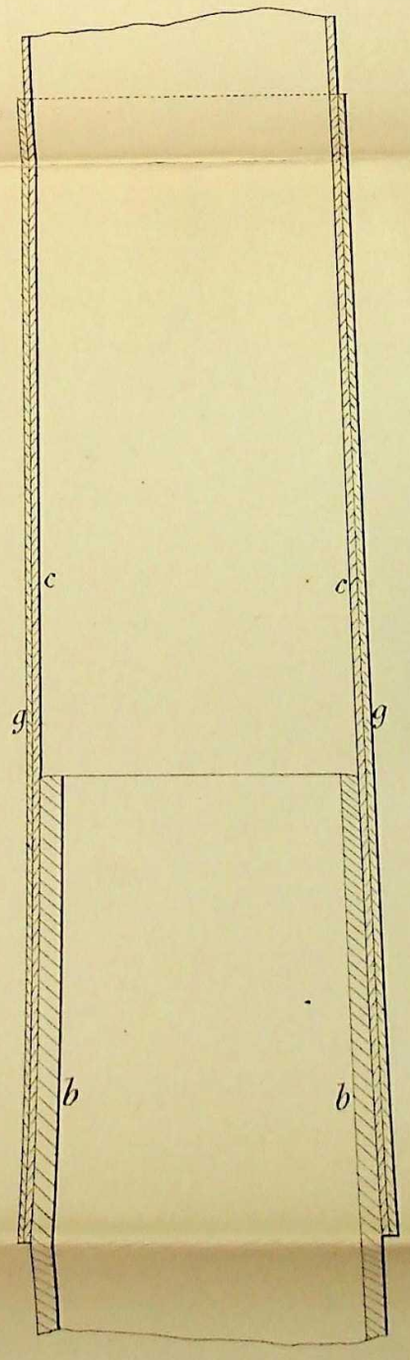


FIG. 5.

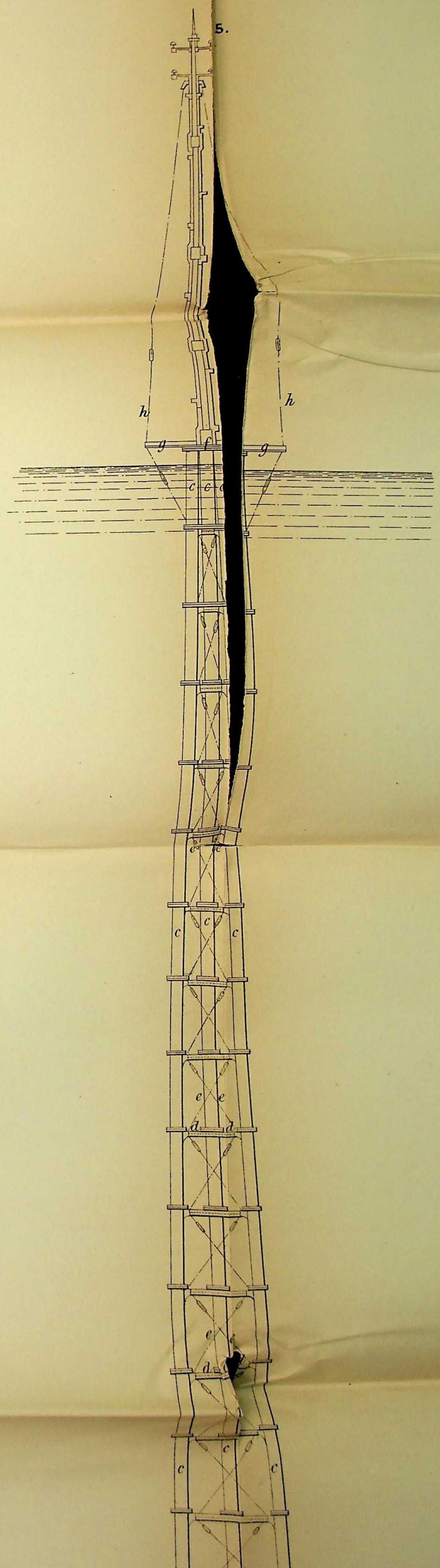


FIG.

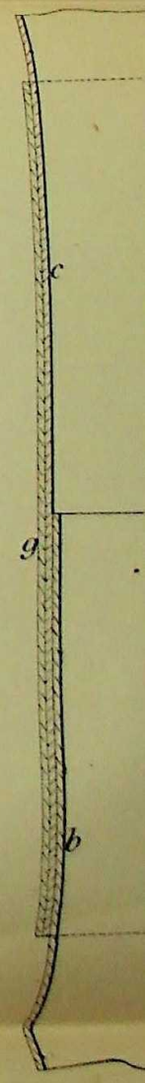
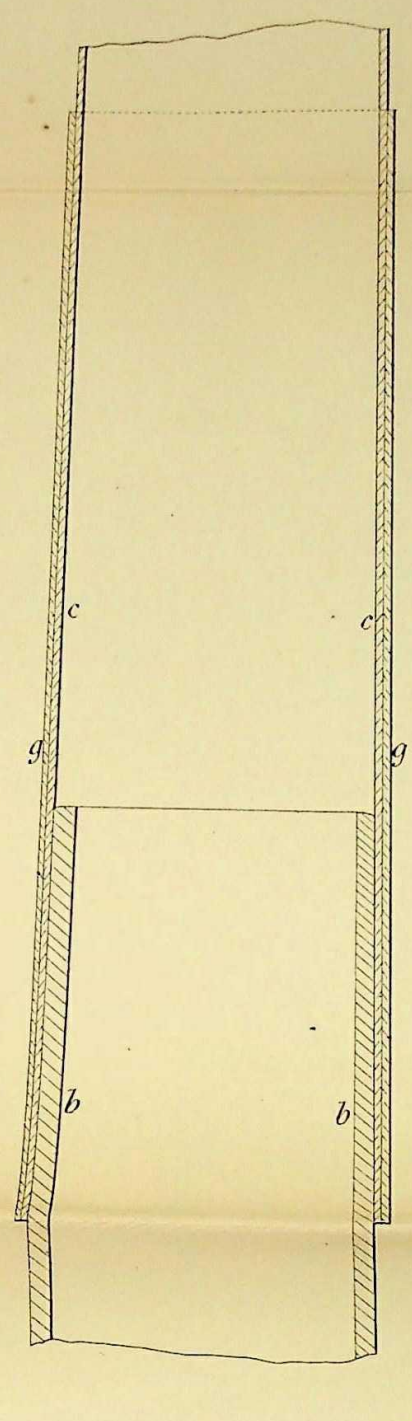
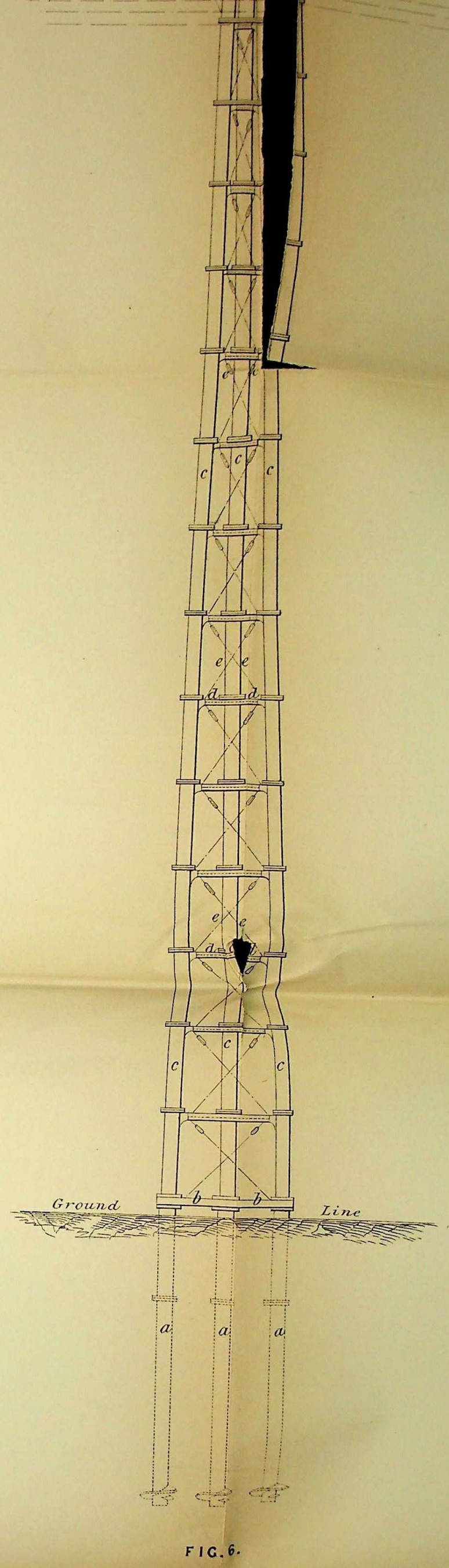
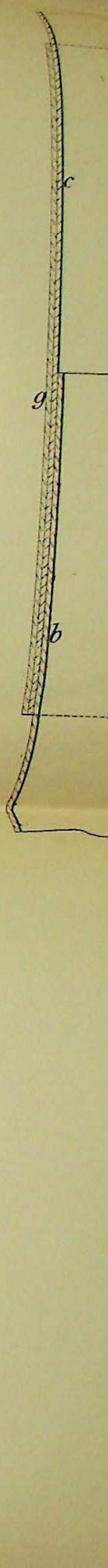


FIG. 4.







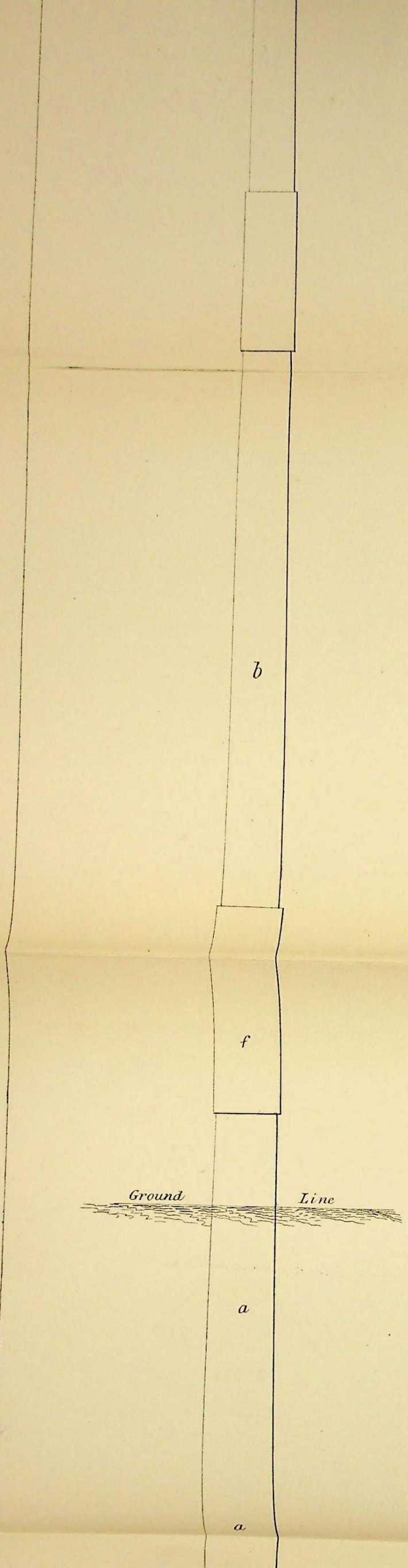


FIG. 6.

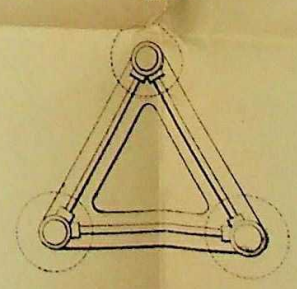


FIG. 2.

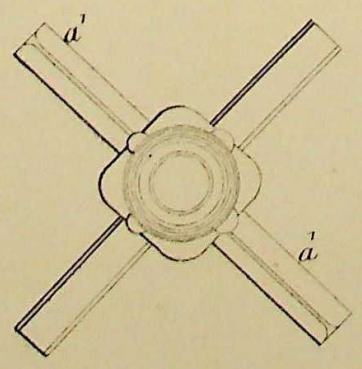


FIG. 5.

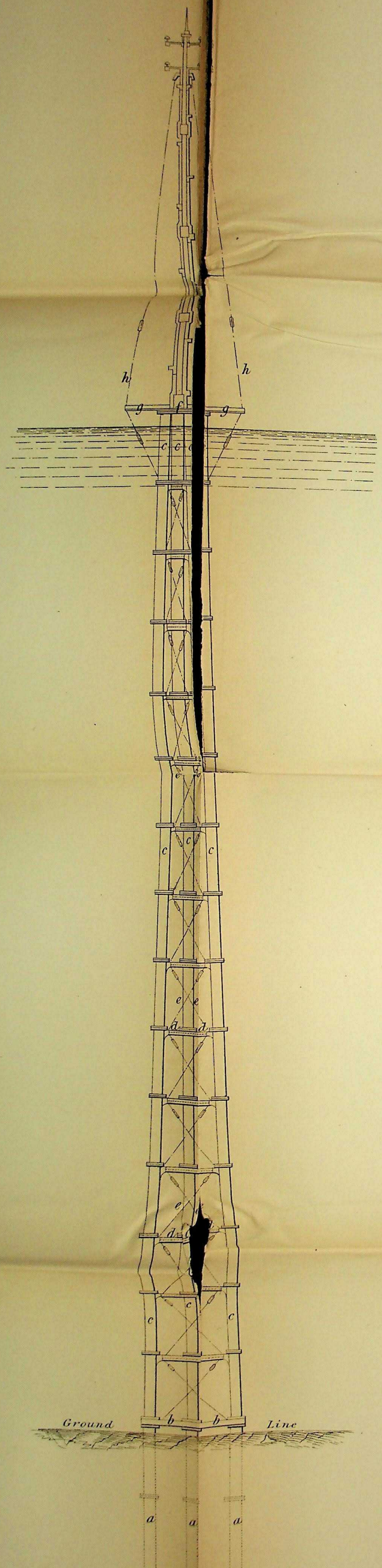


FIG. 10.

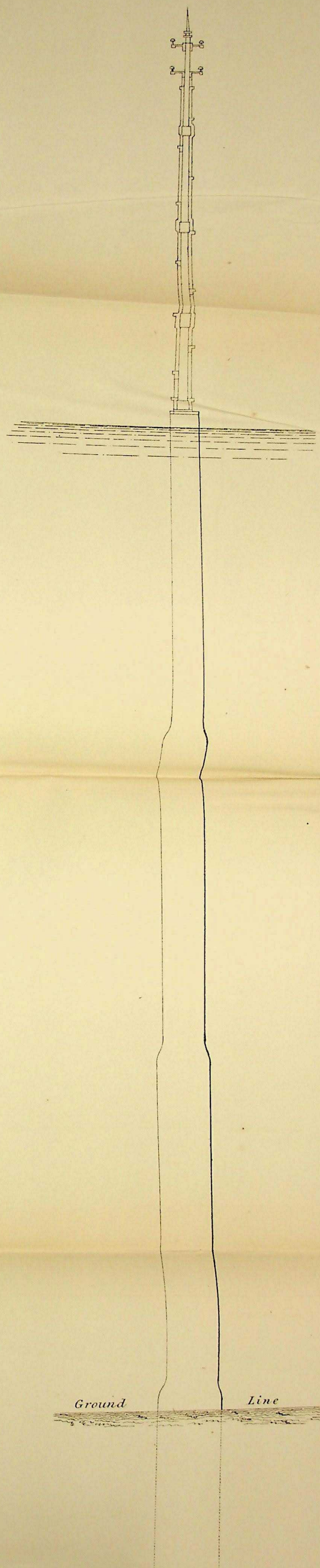
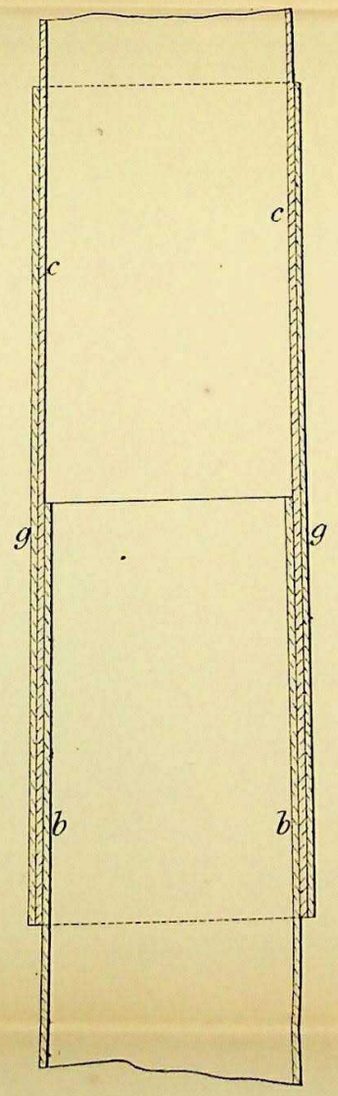


FIG. 3.



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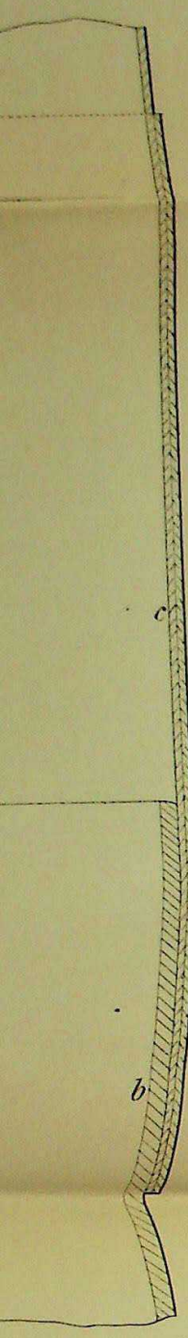


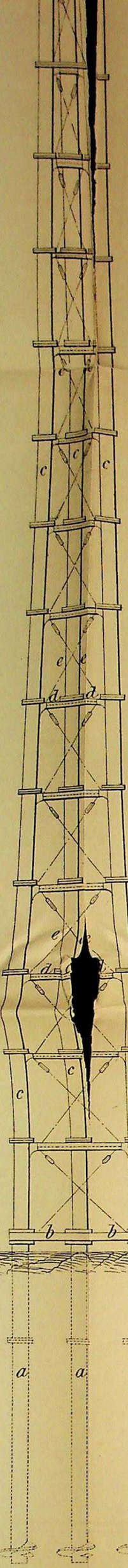


FIG. 6.

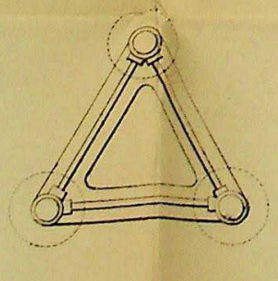
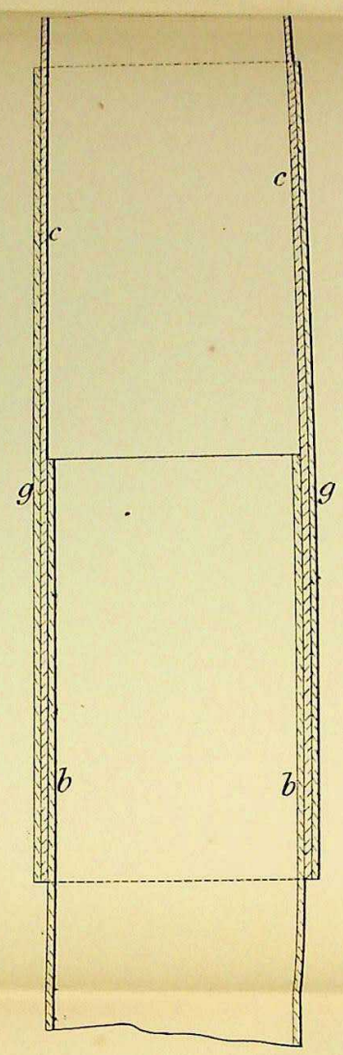
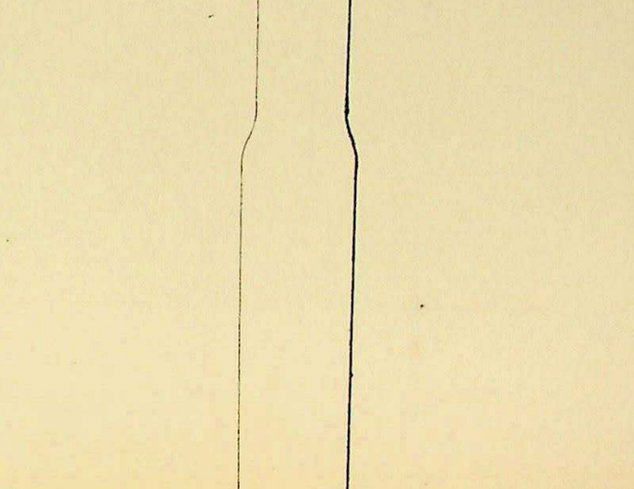


FIG. 3.





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A.D. 1867, Nov.30, N°.3406,
SHARROCK'S SPECIFICATION.

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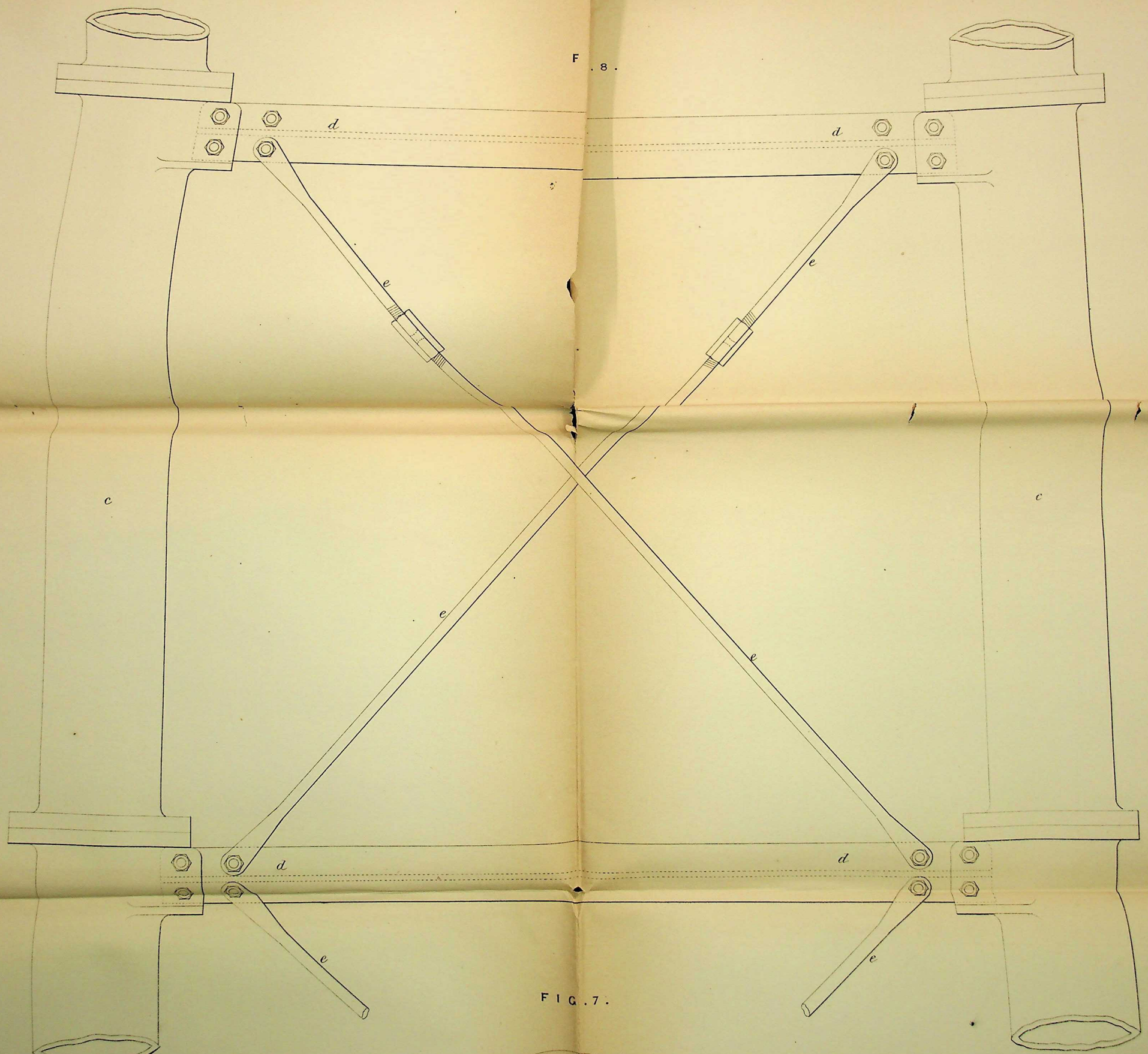

FIG. 7.

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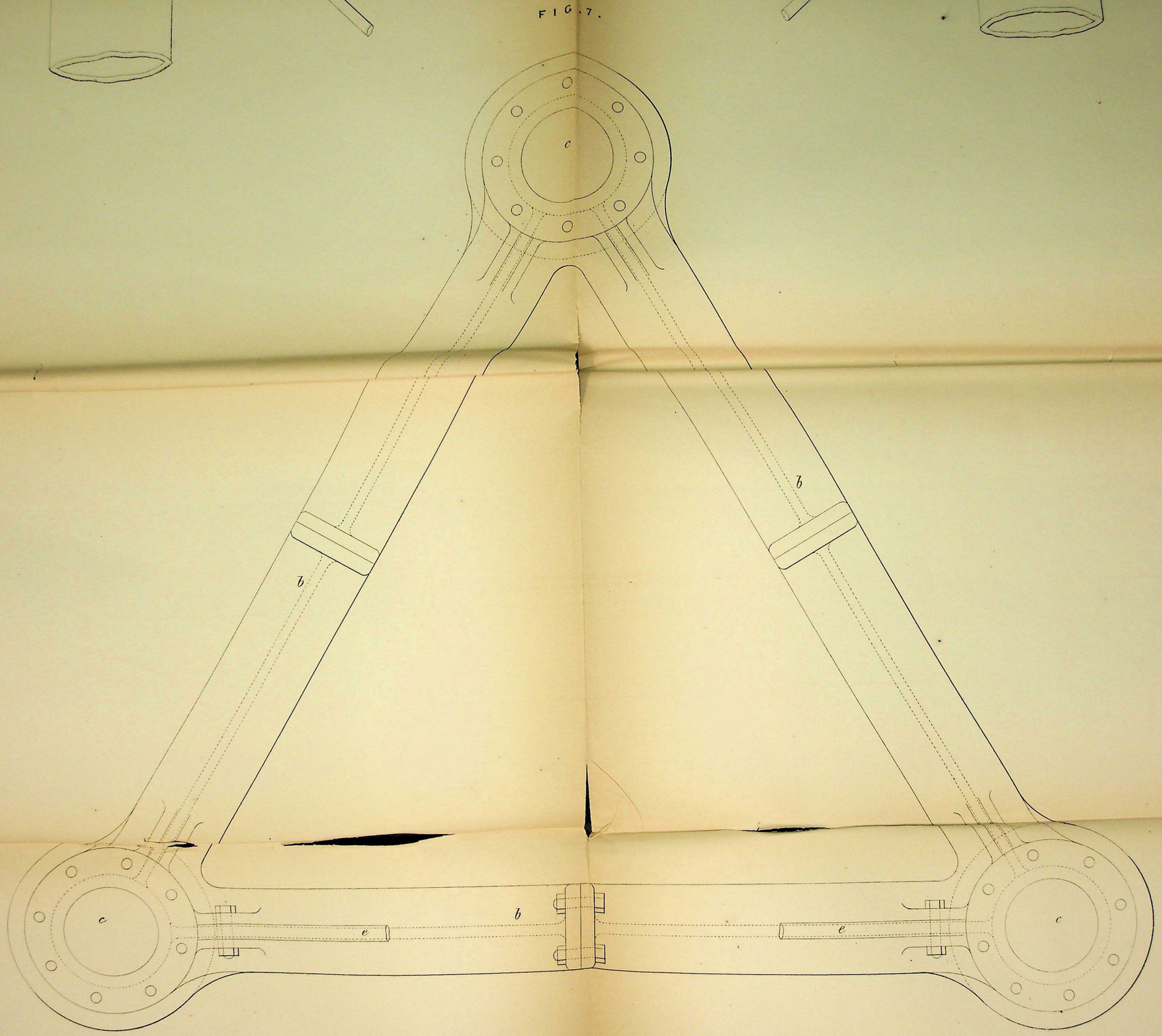
FIG. 7.



The tiled drawing is not colored.

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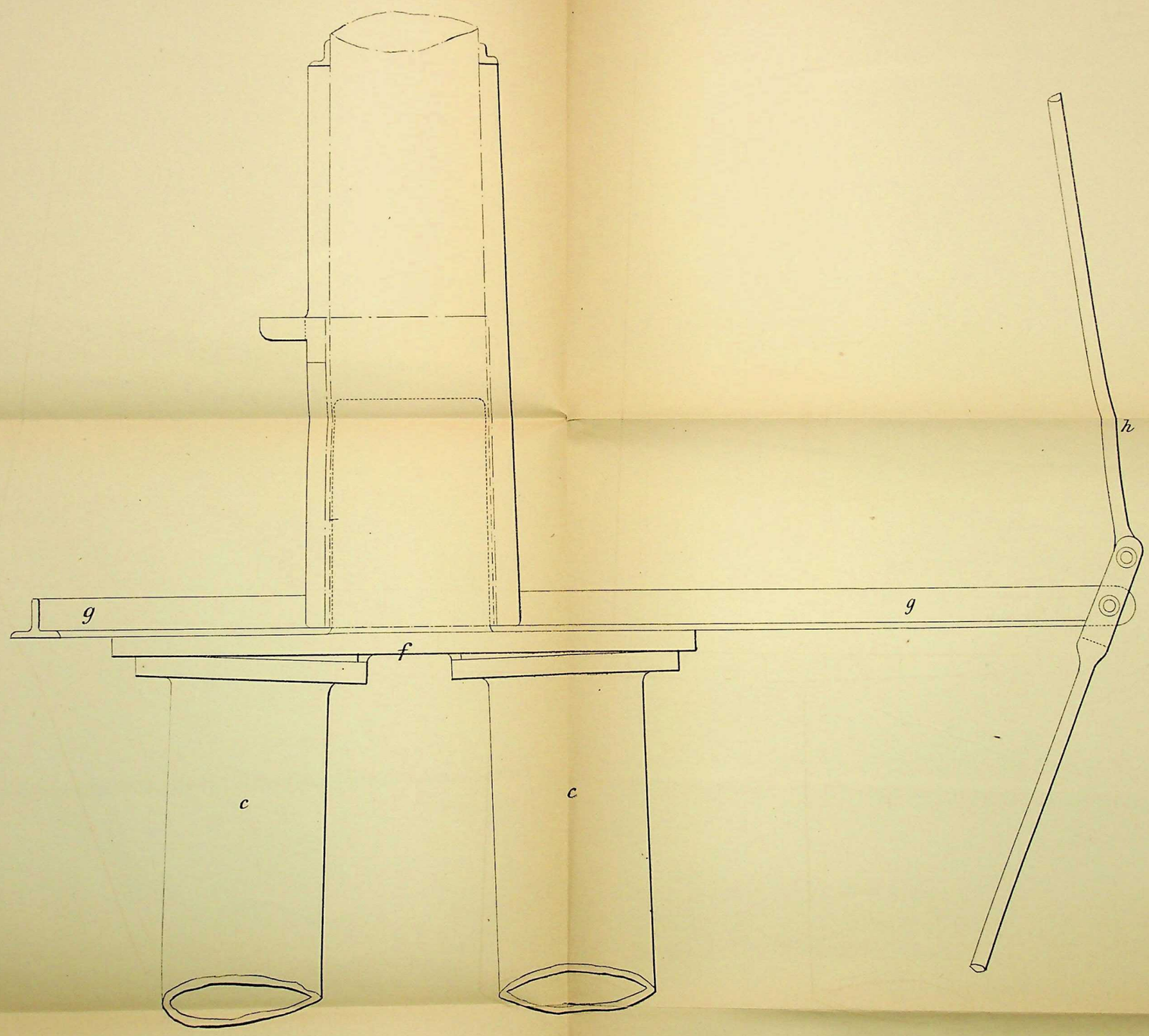
Printers to the Queen's most Excellent Majesty 1868

FIG. 9.



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YRE and WILLIAM SPOTTISWOODE,
Excellent Majesty 1868